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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/788,578

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Andrew P. Nguyen

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04/17/2007

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EXAMINER

TADESSE, YEWEDDAR T

ART UNIT

PAPER NUMBER

1734

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

04/17/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

4

Office Action Summary	Application No. 10/788,578	Applicant(s) NGUYEN, ANDREW P.	
	Examiner Yewebdar T. Tadesse	Art Unit 1734	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,7-18,22-28,32 and 43-57 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,7-17,28,32 and 43-57 is/are allowed.
- 6) ☒ Claim(s) 18 and 22-25 is/are rejected.
- 7) ☒ Claim(s) 26 and 27 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 01/23/2007 has been entered.

Claim Objections

2. Claim 1 is objected to because of the following informalities: In claim 1, lines 19-22 the limitation that " wherein the dispense head further comprising at least one nozzle, the at least one outlet opening being at an end thereof; and a casing having a chamber therein and an opening connected to the chamber and sized to fit at least one nozzle of the dispense head" is unclear because it is not clear that whether the casing is for the dispense head or for the solvent bath, it is noted that a solvent bath having a reservoir is already claimed on line 6. For the purpose of examination "wherein the dispense head further comprises at least one nozzle, the at least one outlet opening being at an end thereof; and wherein the solvent bath further comprises a casing having a chamber therein and an opening connected to the chamber and sized to fit at least one nozzle of the dispense head" is assumed. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 18 and 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akimoto et al (US 5,938,847) in view of Ushijima et al (US 5,002,008).

As to claims 18 and 22-23, Akimoto et al discloses (see Figs 2-3) a semiconductor substrate processing apparatus comprising a frame (casing 13a); a substrate support (spin chuck 22) mounted to the frame to support a semiconductor substrate; a dispense head (31) having at least one outlet opening (nozzle N1-N4); connected to the frame for movement relative to the semiconductor substrate (W); a solvent bath (receptacle 51) attached to the frame (see Fig 3), the solvent bath (51) having a drain (53), the dispense head (32) having first and second selected positions, in the first position a fluid or resist liquid dispensed through nozzle and in the second

Art Unit: 1734

selected position the nozzle is kept in the receptacle, the solvent bath has a recess for the dispense head to engage the solvent bath (receptacle 51) and the fluid dispense from the outlet opening enters the drain (53). Akimoto et al lacks teaching a solvent bath having a reservoir holding a first fluid and the shape of the solvent bath such that when the dispense head is in a selected position, a second fluid dispensed from the at least one outlet opening enters the drain without mixing with the first fluid in the reservoir while the at least one outlet opening is exposed to air saturated with vapor of the first fluid in the reservoir, wherein the solvent bath includes a recess for the dispense head to engage the solvent bath such that a fit of the dispense head into the recess substantially seals the solvent bath such that only a minimal amount of saturated air escape therethrough, and wherein the second fluid exits the solvent bath through the drain without mixing with the first fluid and wherein the recess helps guide the dispensing head into position. Ushijima et al discloses (see Fig 6) a solvent bath (vessel 100) having a reservoir (107), holding a first fluid; a drain (106) and the solvent bath is shaped when the dispense head is in a selected position in the solvent bath (100), a second fluid dispensed from the at least one outlet opening enters the drain (106) and at least one outlet opening is exposed to the first fluid, wherein the solvent bath (100) includes a recess (97a) for the dispense head to engage the solvent bath such that a fit of the dispense head (nozzle 30a) into the recess substantially seals the solvent bath (see Fig 6) such that only a minimal amount of saturated air escape therethrough, and wherein the second fluid dispensed from the at least one outlet opening enters the drain (106) without mixing with the first fluid while the at least one

Art Unit: 1734

outlet opening is exposed to air saturated with vapor of the first fluid in the reservoir (see Fig 6) and wherein the recess helps guide the dispense head into position without a tip of the at least one nozzle of the dispense head contacting the opening in the casing sized to fit the at least one nozzle of the dispense head (see Fig 6 of Ushijima et al that the recess opening is wider than the tip of the nozzle as such that tip of the nozzle is capable of being inserted without touching the recess and the movable dispense head is capable of being positioned as claimed). It would have also been obvious to one of ordinary skill in the art at the time the invention was made to use a solvent bath including, a reservoir holding a first fluid, a recess for the dispense head to engage the solvent bath such that a fit of the dispense head into the recess substantially seals the solvent bath and wherein a second fluid dispensed from the at least one outlet opening enters the drain without mixing with the first fluid in the reservoir while the at least one outlet opening is exposed to air saturated with vapor of the first fluid in the reservoir in Akimoto et al to prevent the resist solution from being dried on the surface of the nozzle as taught by Ushijima et al (see column 5, lines 20-33).

With respect to claims 24-25, Akimoto et al lacks teaching the structure of the solvent bath. Ushijima et al discloses (see Figs 5- 6) a solvent bath having a casing having a chamber sized to fit at least one nozzle comprising a base, side wall, a top piece, wherein the drain (106) and the reservoir (107) are attached to the base of the casing, the opening is in the top piece of the casing and the side wall interconnects the base and the top piece and a fit between the dispense head and the opening substantially seal the chamber. It would have been obvious to one of ordinary skill in the

Art Unit: 1734

art at the time the invention was to construct the solvent bath having a casing and others as claimed in Akimoto et al as modified to maintain the nozzle within a volatile atmosphere preventing the resist solution from being dried (see column 5, lines 20-33).

Allowable Subject Matter

6. Claims 1 and 7-17, 28, 32 and 43-57 are allowed.
7. Claims 26-27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
8. The following is a statement of reasons for the indication of allowable subject matter: as to claims 1 and 7-17, prior art of record does not disclose or suggest, a semiconductor substrate processing apparatus comprising, among others, a solvent bath having a reservoir, a recess for the dispense head to engage the solvent bath such that a fit of the dispense head into the recess seals the solvent bath and a casing having a chamber therein and an opening connected to the chamber sized to fit at least one nozzle of a dispense head, wherein the opening in the casing sized to fit at least one nozzle of the dispense head. The subject matter of the claims 26-28, 32, 43-50, 52-57 is deemed allowable for the reasons set forth in the office action dated 09/21/2006.

Response to Arguments

9. Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yewebdar T. Tadesse whose telephone number is (571) 272-1238. The examiner can normally be reached on Monday-Friday 8:00 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Fiorilla can be reached on (571) 272-1187. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


YTT